Magneto-plasmonic heat nano-generators for bimodal hyperthermia

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The incorporation of several functions within a single micro or nano-structure provides an attractive system for diagnostic and therapeutic applications in nanomedicine [1, 2]. Magneto-plasmonic nanohybrids are new multifunctional nanomaterials that are attracting increasing attention: the plasmonic component brings potential for imaging applications and photothermal therapy, due to its plasmon-induced surface absorption, while the magnetic part makes these nanoparticles suitable for use as nanoheaters, MRI contrast agents or magnetic targeting.
Here in, we present the design, implementation and demonstration in of new nanoscale architecture, a magneto-plasmonic nanohybrid [3], composed of a core optimized for high efficiency in magnetic hyperthermia, and a gold shell with tunable plasmonic properties from the visible to the near infrared region (NIR). This nanohybrid combines efficiently magnetic and plasmonic thermal effects, either in suspension or *in vivo* conditions, becoming into a versatile candidate for new hyperthermic-modalities for cancer therapy.

References

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